

## CLAIMS

1. A method for manufacturing a cooling element (1) to be used in the structure of a furnace used in metal processes, such as a flash smelting furnace, a blast furnace, an electric furnace or other metallurgical reactor, said cooling element comprising a copper housing (2) made of one single piece, in which housing there is formed a channel system (3) for the circulation of the cooling medium, lining elements (4) made of fireproof material, said housing and lining element including means for connecting them together, **characterized** in that the lining element (4) and the housing (2) are connected so that the lining element (4) can move in the vertical direction with respect to the housing (2).  
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2. A method according to claim 1, **characterized** in that in the surface (8) of the housing, there are arranged vertical grooves (5), in which the lining elements (4) are placed.  
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3. A method according to claim 1 or 2, **characterized** in that in the lining element (4) there is arranged a bracket-like edge part (6) that fits in the groove (5) provided in the housing.  
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4. A method according to claim 2 or 3, **characterized** in that in the vertical groove (5) arranged on the surface (8) of the housing, there are placed lining elements along the whole width of the groove, so that the lining elements are located on top of each other.  
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5. A method according to claim 2, 3 or 4, **characterized** in that the groove (5) arranged in the housing (2) is narrowed from the groove bottom (7) towards the surface (8) of the housing.
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6. A method according to claim 2, 3, 4 or 5, **characterized** in that the width of the groove bottom (7) is essentially 55 – 100 millimeters.

7. A method according to claim 2, 3, 4, 5 or 6, **characterized** in that the width of the groove orifice (9) is essentially 50 – 95 millimeters.
- 5 8. A method according to claim 2, 3, 4, 5, 6 or 7, **characterized** in that the depth of the groove (5) is essentially 30 – 60 millimeters.
9. A method according to any of the claims 2 – 8, **characterized** in that the cooling element (1) is placed in the furnace so that the grooves (5) are positioned in the vertical direction.
- 10 10. A method according to any of the preceding claims, **characterized** in that the bottom part (10) of the housing (2) is narrowed downwards.
- 15 11. A method according to any of the preceding claims, **characterized** in that the lining elements (4) are connected to the housing (2) before the cooling element is installed in the furnace.
- 20 12. A method according to any of the claims 1 – 10, **characterized** in that the lining elements (4) are connected to the housing (2) after the housing is installed in the furnace.
13. A method according to any of the preceding claims, **characterized** in that in the depth direction of the cooling element, the lining elements (4) extend to outside the housing (2).
- 25 14. A method according to any of the preceding claims, **characterized** in that the lining elements (4) completely cover that surface (8) of the housing (2) that gets into contact with the melt.
- 30 15. A method according to any of the preceding claims, **characterized** in that the cooling elements (1) are interconnected at the junctions (11) provided in the elements.

16. A method according to claim 15, **characterized** in that in the auxiliary groove (12) formed at the junction (11) there are placed lining elements in the vertical direction.

5      17. A cooling element (1) to be used in the structure of a furnace used in metal processes, such as a flash smelting furnace, a blast furnace, an electric furnace or other metallurgical reactor, said cooling element comprising a copper housing (2) made of one single piece, in which housing there is formed a channel system (3) for the circulation of the cooling medium, lining elements (4) made of fireproof material, said housing and lining element including means for connecting them together, **characterized** in that the lining element (4) and the housing (2) are connected so that the lining element (4) is movable in the vertical direction with respect to the housing (2).

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15      18. A cooling element according to claim 17, **characterized** in that on the surface (8) of the housing there are arranged vertical grooves (5), in which the lining elements (4) are placed.